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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/523,263	03/07/2005	Gerrit Luinstra	13156-00001-US	1826

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CONNOLLY BOVE LODGE & HUTZ, LLP
P O BOX 2207
WILMINGTON, DE 19899

EXAMINER	
SHIAO, REI TSANG	

ART UNIT	PAPER NUMBER
1626	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/523,263	LUINSTRA ET AL.	
	Examiner	Art Unit	
	Rei-tsang Shiao, Ph.D.	1626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 May 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *02/01/05, 08/29/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This application claims benefit of the foreign application: Germany 102-35-317.4 with a filing date 08/01/2002. However, an English-translated version of the certified copy of the foreign document has not been filed to the Office, the instant foreign priority has not been granted.

2. Claims 1-8 are pending in the application.

Information Disclosure Statement

3. Applicant's Information Disclosure Statements, filed on February 01, 2005, and August 29, 2005 have been considered. Please refer to Applicant's copies of the 1449's submitted herein.

Responses to Election/Restriction

4. Applicant's election with traverse of election of Group I claims 1-8, in part, in the reply filed on May 09, 2007 is acknowledged. The traversal is on the grounds that a search and examination of the entire application would not place a serious burden on the Examiner, and MPEP §803 is cited.

This is found not persuasive, and the reasons are given *infra*.

Claims 1-8 are pending in the application. The scope of the invention of the elected subject matter is as follows.

Claims 1-8, in part, drawn to processes of making lactones, wherein the starting material oxiranes is elected from ethylene oxide, propylene oxide, butylene oxide, cyclopentene oxide, cyclohexene oxide thereof.

The claims 1-8 herein lack unity of invention under PCT rule 13.1 and 13.2 since the compounds defined in the claims lack a significant structural element qualifying as the special technical feature that defines a contribution over the prior art, see Drent et al. US 5,310,948. Ornstein's disclose similar epioxide or oxiranes compounds (e.g. ethylene oxide) as starting material of the instant invention for preparation of lactone., see columns 3-6. Accordingly, unity of invention is considered to be lacking and restriction of the invention in accordance with the rules of unity of invention is considered to be proper. Furthermore, even if unity of invention under 37 CFR 1.475(a) is not lacking, which it is lacking, under 37 CFR 1.475(b) a national stage application containing claims to different categories of invention will be considered to have unity of invention if the claims are drawn only to one of the following combinations:

(1) A product and a process specially adapted for the manufacture of said product', or

(2) A product and a process of use of said product; or

(3) A product, a process specially adapted for the manufacture of the said product, and a use of the said product; or

(4) A process and an apparatus or means specifically designed for carrying out the said process; or

(5) A product, a process specially adapted for the manufacture of the said product, and an apparatus or means specifically designed for carrying out the said process.

And, according to 37 CFR 1.475(c)

if an application contains claims to more or less than one of the combinations of categories of invention set forth in paragraph (b), unity of invention might not be present.

However, it is noted that unity of invention is considered lacking under 37 CFR 1.475(a) and (b). Therefore, since the claims are drawn to more than a product, and according to 37 CFR 1.475 (e)

> the determination whether a group of inventions is so linked as to form a single general inventive concept shall be made without regard to whether the inventions are claimed in separate claims or as alternatives within a single claim.

The claims lack unity of invention and should be limited to only a product, or a process for the preparation, or a use of the said product. In the instant case, Groups I-II are drawn to various products, processes of making, and the final products do not contain a common technical feature or structure, and do not define a contribution over the prior art, i.e., similar epoxide compounds. Moreover, the examiner must perform a commercial database search on the subject matter of each group in addition to a paper search, which is quite burdensome to the examiner.

Claims 1-8, in part, embraced in above elected subject matter, are prosecuted in the case. Claims 1-8, in part, not embraced in above elected subject matter, are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention.

The requirement is still deemed proper.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-8 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a process for preparing lactone using starting

material propylene oxide, it does not reasonably provide enablement for a process for preparing lactone using starting material oxiranes without limitation (i.e., no formula), see claim 1. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. Dependent claims 2-8 are also rejected along with claim 1 under

35 U.S.C. 112, first paragraph.

In *In re Wands*, 8 USPQ2d 1400 (1988), factors to be considered in determining whether a disclosure meets the enablement requirement of 35 U.S.C. 112, first paragraph, have been described. They are:

1. the nature of the invention,
2. the state of the prior art,
3. the predictability or lack thereof in the art,
4. the amount of direction or guidance present,
5. the presence or absence of working examples,
6. the breadth of the claims,
7. the quantity of experimentation needed, and
8. the level of the skill in the art.

In the instant case:

The nature of the invention

The nature of the invention is a process for preparing lactone using starting material oxiranes without limitation (i.e., no formula), see claim 1.

The state of the prior art and the predictability or lack thereof in the art

The state of the prior art is that a similar process, wherein the oxiranes represents ethyleneoxide, see Drent et al. US 5,310,948.

The amount of direction or guidance present and the presence or absence of working examples

The only direction or guidance present in the instant specification is the example compounds on pages 8-14 of the specification. There is no data present in the instant specification for the starting material oxiranes without limitation (i.e., no formula).

The breadth of the claims

The instant breadth of the rejected claims is broader than the disclosure, specifically, the starting material oxiranes is not limited (i.e., no formula).

The quantity or experimentation needed and the level of skill in the art

While the level of the skill in the chemical arts is high, it would require undue experimentation of one of ordinary skill in the art to resolve any oxiranes compounds. There is no guidance or working examples present for constitutional any oxiranes compounds for the starting materials for the instant invention. Incorporation of

the limitation of the oxiranes (i.e., formula (II)) into claim 1 would overcome this rejection.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1-8 are rejected under 35 U.S.C. 102(a) as being anticipated by Allmendinger et al. publication, Z. Anorg. Allg. Chem., 2003, 629:1347-1352.

Applicants claim a process of making lactones by catalytic carbonylation of oxiranes (i.e., epoxide), wherein the catalyst comprising one cobalt compounds and one metal compound of formula (I) (i.e., MXxRn-x).

Allmendinger et al. disclose a process of making lactiones by catalysytic carbonylation of epoxide, wherein the catalyst comprising one cobalt compound and one cobalt compound, i.e., $Co_2(CO)8/AlR_3$, wherein the variable R is methyl, ethyl or butyl, see pages 1350-1351. Therefore Allmendinger et al. processes meet the required elements of the instant invention.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being obvious over Allmendinger et al. publication, Z. Anorg. Allg. Chem., 2003, 629:1347-1352.

Applicants claim a process of making lactones by catalytic carbonylation of oxiranes (i.e., epoxide), wherein the catalyst comprising one cobalt compound and one metal compound of formula (I) (i.e., MXxRn-x). Dependent claims 2-8 further limit a number of variables, i.e., the metal compound is trimethylaluminum.

Determination of the scope and content of the prior art (MPEP §2141.01)

Allmendinger et al. disclose a process of making lactones by catalytic carbonylation of epoxide, wherein the catalyst comprising one cobalt compound and one cobalt compound, i.e., $Co_2(CO)8/AlR_3$, wherein the variable R is methyl, ethyl or butyl, see pages 1350-1351.

Determination of the difference between the prior art and the claims (MPEP §2141.02)

The difference between the instant claims and Allmendinger et al. is that the instant metal compound represents a compound of formula (I), while Allmendinger et al. represents a compound of the formula AlR_3, wherein the variable R is methyl, ethyl or butyl. Allmendinger et al. processes overlap with the instant invention.

Finding of prima facie obviousness-rational and motivation (MPEP §2142-2143)

One having ordinary skill in the art would find the instant claims 1-8 prima facie obvious **because** one would be motivated to employ the processes of Allmendinger et al. to obtain the instant processes for preparing lactones, wherein

oxiranes (i.e., epoxide) are used as starting materials in the presence of a catalyst comprising one cobalt compound and one metal compound of formula (I) (i.e., MXxRn-x). Dependent claims 2-8 are also rejected along with claim 1 under 35 U.S.C. 103(a).

The motivation to obtain the claimed processes derives from known Allmendinger et al. processes would possess similar yields to that which is claimed in the reference.

Claim Objections

8. Claim 4 is objected to as containing non-elected subject matter, i.e., the claimed catalyst. Amendment of claim 4 as a process claim would obviate the objection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rei-tsang Shiao whose telephone number is (571) 272-0707. The examiner can normally be reached on 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph K. McKane can be reached on (571) 272-0699. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Rei-tsang Shiao, Ph.D.
Patent Examiner
Art Unit 1626

June 18, 2007